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# DRYING FRUITS AND VEGETABLES IN THE HOME

WITH RECIPES FOR COOKING



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**F**RUITS and vegetables may be dried in the home by simple processes and stored for future use. Especially when canning is not feasible, or cans and jars are too expensive, drying offers a means of saving large quantities of surplus products which go to waste each year in gardens and fruit plots. Drying also affords a way of conserving portions of food which are too small for canning.

The drying may be done in the sun, over the kitchen stove, or before an electric fan. Manufacturers have placed driers on the market. Homemade driers are satisfactory.

A good homemade drier should have the following features:

(1) It should be light, easy to operate, of simple construction, inexpensive, and, as nearly as possible, noninflammable.

(2) It should permit a free circulation of air, to allow the rapid removal of the air after it has passed over the vegetables and absorbed moisture.

(3) It should provide for protection of the food product against dust, insects, etc.

(4) It should protect the materials from being moistened by steam, smoke, rain, or dew while drying.

The principles, methods, and equipment are described in the following pages.

# DRYING FRUITS AND VEGETABLES IN THE HOME.

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## REASONS FOR DRYING FRUITS AND VEGETABLES.

ONE of the most prominent features of the food conservation program of European countries has been the universal drying of fruits and vegetables. The surplus vegetables in the city markets were forced by the Governments into large municipal drying plants. Community driers were established in the trucking regions and even itinerant drying machines were sent from farm to farm drying the vegetables which otherwise would have gone to waste. In addition, large quantities of dried vegetables from Canada and this country were shipped to France during the last two years, and there is a possibility that dried fruits and vegetables may continue to be shipped abroad in considerable quantities to supplement the concentrated food diet of the men in the trenches.

The drying of vegetables may seem strange to the present generation, but to our grandmothers it was no novelty. Many house-



FIG. 1.—Dried snap beans which were sliced before drying.

wives even to-day prefer dried sweet corn to the product canned by the old method, and say also that dried pumpkin and squash are excellent for pie making. Snap beans often are strung on threads and dried above the stove. Cherries and raspberries still are dried on bits of bark for use instead of raisins. In fact, many of the everyday foodstuffs already are dried at some stage of their preparation for market. The common dried fruits, such as prunes, raisins, figs, dates, and apples, are staples in the world's markets, while beans and other legumes, tea, coffee, cocoa, and various manufactured foods, like starch, tapioca, macaroni, etc., are dried either in the sun and wind or in specially constructed driers.

Even though the drying of fruits and vegetables as practiced a few decades ago on many farms has become practically a "lost art," the present food situation doubtless will cause a marked stimulation of drying as a means of conserving the food supply. This country is producing large quantities of perishable foods this year, which should be saved for storage, canned, or properly dried. Drying is not a panacea for the entire waste evil, nor should it take the place of storing or canning to any considerable extent where proper storage facilities are available or tin cans or glass jars can be obtained readily and at a low cost.

The advantages of drying vegetables are not so apparent for the farm home as they are for the town or city household, which has no root cellar or other place in which to store fresh vegetables. For the farmer's wife the new methods of canning probably will be better than sun drying, which requires a somewhat longer time. But shorter methods of drying are available, and the dried product holds an advantage in that usually it requires fewer jars, cans, or other containers than do canned fruits or vegetables; also dried material can be stored in receptacles which can not be used for canning. Then, too, canned fruit and vegetables freeze and can not be shipped as conveniently in winter. Dried vegetables can be compacted and shipped with a minimum of risk.

To the housewife in the town the drying of vegetables and fruits presents special advantages. During the season when the market is oversupplied locally and prices are low she can lay in a stock, dry it, and put it away for a winter's emergency without its taking up much of the needed small storage space in her home. If she is accustomed to canning her fruit and vegetables and finds she can not secure jars or tin cans, she can easily resort to drying.

With simple and inexpensive facilities, all housewives can save quantities of food which are too small conveniently to can. A few sweet potatoes or apples or peas or even a single turnip can be dried and saved. Even when very small quantities are dried at a time, a

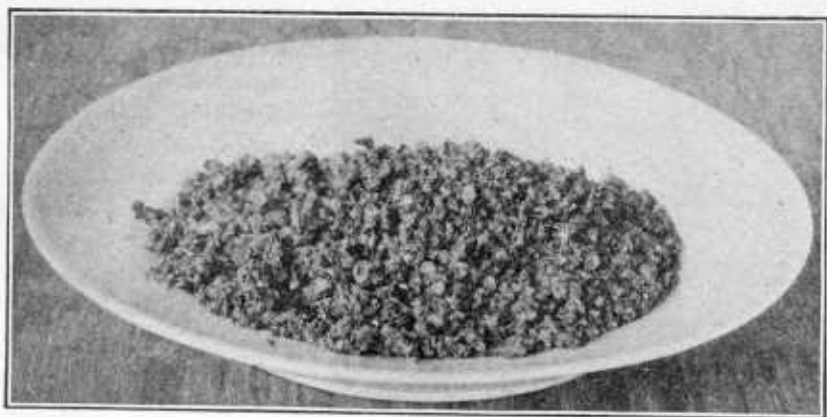


FIG. 2.—Green peas run through a meat grinder and dried.



FIG. 3.—Carrots sliced lengthwise and dried.



FIG. 4.—Spinach passed through a slicer and dried.



FIG. 5.—Meat grinder used for making cooked potato into strings, dropped directly into a tray for drying.

quantity sufficient for a meal will soon be secured. Small lots of several dried vegetables, such as cabbage, carrots, turnips, potatoes, and onions, can be combined to advantage for soups and stews.

This bulletin records some of the points brought out in a preliminary investigation of the home drying of fruits and vegetables which has been conducted by the department.

#### PRINCIPLES AND METHODS OF DRYING.

Three main ways of drying are applicable in the home manufacture of dried fruits and vegetables, namely, sun drying, drying by artificial heat, and drying by air blast. These, of course, may be combined. In general, most fruits or vegetables, to be dried quickly, must first be shredded or cut into slices, because many are too large to dry quickly or are covered with a skin, the purpose of which is to prevent drying out. When freshly cut fruits or vegetables are to be dried by means of artificial heat, they should be exposed first to gentle heat and later to the higher temperatures. If the air applied at the outset is of too high a temperature, the cut surfaces of the sliced fruits or vegetables become hard, or scorched, covering the juicy interior so that it will not dry out. Generally it is not desirable that the air temperature in drying should go above 140° to 150° F., and it is better to keep it well below this point. Insects and insect eggs are killed by exposure to heat of this temperature.

It is important to know the degree of heat in the drier, and this can not be determined very accurately except by using a thermometer. Inexpensive oven thermometers can be found on the market, or an ordinary chemical thermometer can be suspended in the drier. If a thermometer is not used, the greatest care should be given to the regulation of the heat. The temperature in the drier rises rather quickly and the product may scorch unless close attention is given. The reason sun drying is popularly believed to give fruits and

vegetables a sweeter flavor lies probably in the fact that in the sun they never are scorched, whereas in the oven or over a stove scorching is likely to occur unless careful attention is given them.

Drying of certain products can be completed in some driers within two or three hours. The time required for drying vegetables varies. However, it can be determined easily by a little experience on the part of the person doing the drying. The material should be stirred or turned several times during the drying in order to secure a uniform product.

The ability to judge accurately as to when fruit has reached the proper condition for removal from drier can be gained only by experience. When sufficiently dried it should be so dry that it is impossible to press water out of the freshly cut ends of the pieces, and will not show any of the natural grain of the fruit on being broken, and yet not so dry that it will snap or crackle. It should be leathery and pliable.

When freshly cut fruits or vegetables are spread out they immediately begin to evaporate moisture into the air around them, and if in a closed box will very soon saturate the air with moisture. This will slow down the rate of drying and lead to the formation of molds. If a current of dry air is blown over them continually, the water in them will evaporate steadily until they are dry and crisp. Certain products, especially raspberries, should not be dried hard, because if too much moisture is removed from them they will not resume their original form when soaked in water. On the other hand, the material must be dried sufficiently or it will not keep, but will mold. Too great stress can not be laid upon this point. This does not mean that the product must be baked or scorched, but simply that it must be dried uniformly through and through.

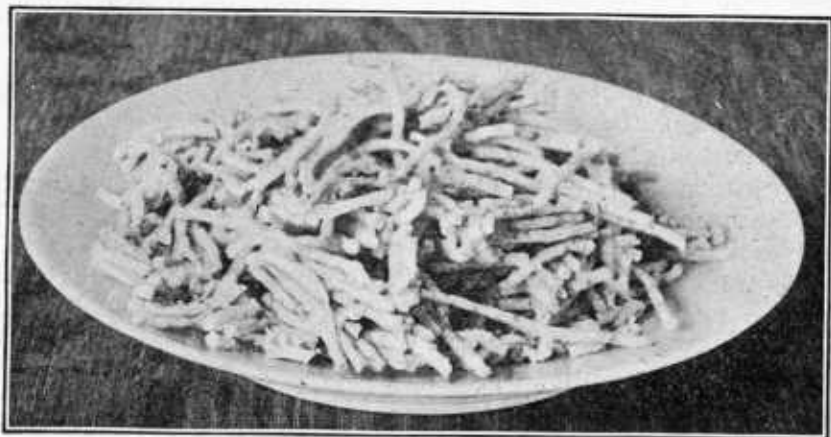


FIG. 6.—These potato strings have been cooked, passed through the meat grinder shown in figure 5, then dried.



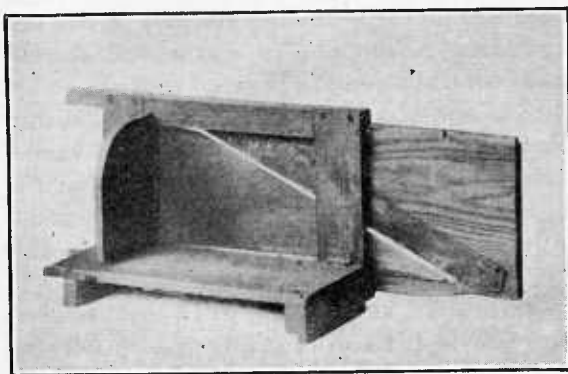


FIG. 7.—A kraut slicer of this type can be used for slicing or shredding the larger vegetables and fruits.

It will be found advisable also to "condition" practically all dried vegetables and fruits. This is best done in a small way by placing the material in boxes and pouring it from one box into another once a day for three or four days, so as to mix it thoroughly and give to the

whole mass an even degree of moisture. If the material is found to be too moist, it should be returned to the drying trays for a short drying.

#### PREPARATION OF FOOD FOR THE DRIER.

In large factories the vegetables are put through special shredders and slicers not adapted for home use, but convenient and inexpensive machines which can be used to great advantage are on the market. The meat grinder (fig. 5) with its special disks can be used in certain cases; the common kraut slicer (fig. 7) will cut large vegetables into thin slices, such as potatoes and cabbage; and the rotary hand slicer shown in figures 8 and 9 is adapted for use on a very wide range of material. A large sharp kitchen knife may be used when a handier cutting device is not available. Care should be taken that the material is sliced thin enough but not too thin. From an eighth to a quarter of an inch is a fair thickness for most of the common vegetables to be sliced and dried. Very small slices or strips dry more quickly



FIG. 8.—A rotary slicer being used to cut string beans into small pieces.

because they expose a greater surface to the air than do larger cut pieces. But if cut too fine they are more difficult to handle in drying, appear to lose somewhat in flavor, and can not be used so advantageously to make dishes like those prepared from the fresh foods.

The slicing machines (figs. 7, 8, 9) are not suitable for children's use, for they will cut fingers as mercilessly as they do vegetables and fruits, and even adults should exercise great caution in their use in the home.

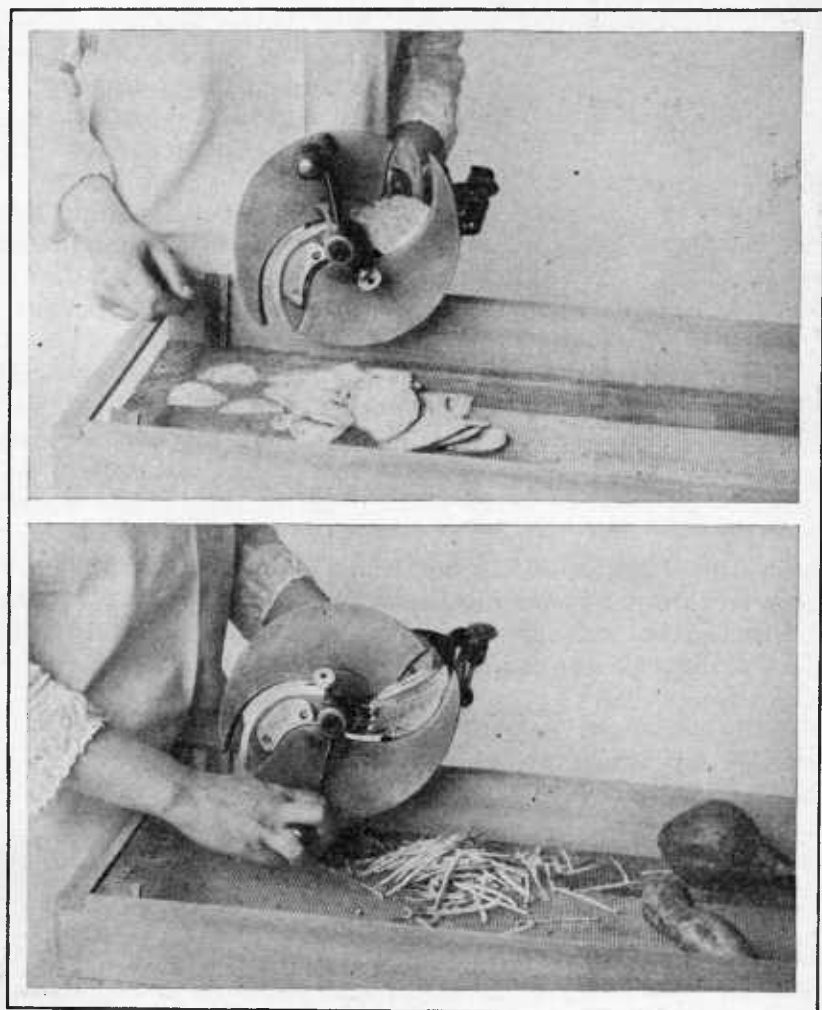


FIG. 9.—The same rotary slicer as shown in figure 8, being used to cut sweet potatoes into slices and these into strips, dropping them on the tray ready to dry.



FIG. 10.—This type of potato peeler removes the skins quickly, leaving the eyes to be removed with a sharp-pointed knife.

peeler such as that shown in figures 10 and 11 may be utilized. The potatoes are thrown by centrifugal force against a rough surface which, under streams of water provided by the perforated tin container above, nicks off the outer skin and leaves only the eyes to be dug out.

Blanching of vegetables is considered desirable by some housekeepers, although it is not strictly essential to successful drying. It is claimed that the blanch gives a more thorough cleaning, removes the strong odor and flavor from certain kinds of vegetables, and softens

Cleanliness is as necessary in the preparation of vegetables and fruits for drying as in their preparation for canning, perhaps even more so. To secure a fine quality of dried products much depends upon having the vegetables absolutely fresh, young, tender, and perfectly clean. If steel knives are used in paring and cutting have them clean and bright so as not to discolor the vegetable. The earthy smell and flavor will cling to root crops if they are not washed thoroughly before slicing, and one decayed root may flavor several kettles of soup if the slices from it are scattered through a whole batch of dried material. High-grade dried "root" vegetables can only be made from peeled roots.

In the preparation of large quantities of potatoes a potato

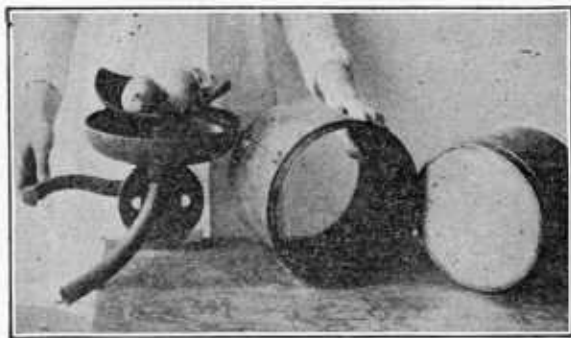


FIG. 11.—Potato peeler taken apart, showing the receptacle (right) which holds the water and the rough-walled chamber (center) which removes the peel.

and loosens the fiber. This allows the moisture in the vegetable to evaporate more quickly and uniformly. It also quickly coagulates the albuminous matter in the vegetables, which helps to hold in the natural flavors. Blanching consists of plunging the vegetable into boiling water for a short time. Use a wire basket or cheese-cloth bag for this. After blanching the required number of minutes, drain well and remove surface moisture from vegetables by placing between two towels or by exposing to the sun and air for a short time.

### APPARATUS FOR DRYING.

The drying of fruits and vegetables in the sun is a simple process if they have been prepared properly. In its simplest form such

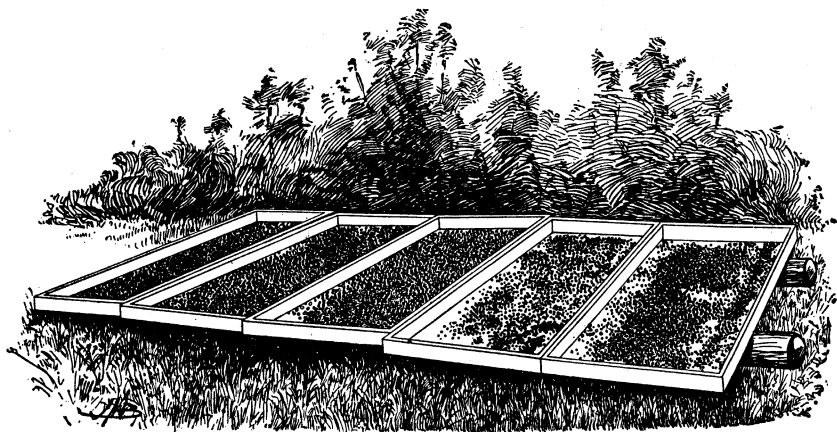


FIG. 12.—Trays used for drying fruits and vegetables in the sun.

drying consists in spreading the freshly prepared slices or pieces on sheets of paper, or, if there is danger of the product's sticking, spreading on old pieces of muslin held down with stones. Bright, hot sunny days are chosen for this work, and a close watch is kept to see that no rain or dew wets the product. If flies and other insects are abundant, a mosquito bar is thrown over the product. Once or twice a day the slices are stirred or turned over with the hand and the thin ones which dry first are taken out. Sun drying has much to recommend it, since it requires no expenditure of fuel and there is little danger of the product becoming overheated. Dust, however, gathers on the product, and, unless it is protected carefully, flies and especially certain insects which habitually attack dried fruits will lay their eggs upon it. These eggs later will hatch out, and the worms, or larvæ, will riddle the dried fruits or vegetables, rendering them unfit for the table.

Fruits and vegetables, when dried in the sun, generally are spread on large trays of uniform size (fig. 12), so constructed that they can be stacked one on top of the other and protected from rain by means of a cover made of oilcloth, canvas, or roofing paper.

A very cheap tray can be made of strips of lumber three-fourths of an inch thick and 2 inches wide, which form the sides and ends, and lath which is nailed on to form the bottom. Spaces one-eighth inch wide should be left between the laths for ventilation, and the trays can be raised off the ground by placing them on poles or an improvised trestle. As laths are 4 feet long, these lath trays are most economical of material when made 4 feet in length.

Better but more expensive trays can be made by substituting galvanized-wire screen,  $\frac{1}{8}$  or  $\frac{1}{4}$  inch mesh, for the laths, in which case the most economical size would depend upon the width of the wire screen obtainable.

A cheap and very satisfactory drier (fig. 13 and title-page illustration) for use over the kitchen stove can be made by any handy boy or carpenter from a small amount of small-mesh galvanized-wire netting and a number of laths or strips of wood about  $\frac{1}{2}$  inch thick and 2 inches wide. The screen may be tacked directly on the framework to make the drying shelves, or the framework can be made to support separate trays. By using two laths nailed together the framework can be stiffened and larger trays made if desirable. This form or any of the lighter makes of driers can be suspended from the ceiling over the kitchen range or over the oil, gasoline, or gas stove, and it will utilize the hot air which rises during the cooking hour. It can be raised out of the way or swung to one side by a crane made of lath (see fig. 13) when the stove is required for cooking purposes, and lowered or swung back to utilize the heat which otherwise would be wasted when the top of the stove is not in use.

Another homemade cookstove drier that can be used on a wood or coal range or a kerosene stove can be made easily and cheaply (fig. 14). Dimensions: Base 24 by 16 inches; height 36 inches. A base 6 inches high is made of galvanized sheet iron. This base slightly flares toward the bottom and has two small openings for ventilation in each of the four sides. On the base rests a boxlike frame made of 1 or  $1\frac{1}{2}$  inch strips of wood. The two sides are braced with  $1\frac{1}{4}$ -inch strips which serve as cleats on which the trays in the drier rest. These are placed at intervals of 3 inches. The frame is covered with tin or galvanized sheet iron which is tacked to the wooden strips of the frame. Thin strips of wood may be used instead of tin or sheet iron. The door is fitted on small hinges and fastened with a thumb latch. It opens wide so that the trays can be removed easily. The bottom of the drier is made of a piece of perforated galvanized

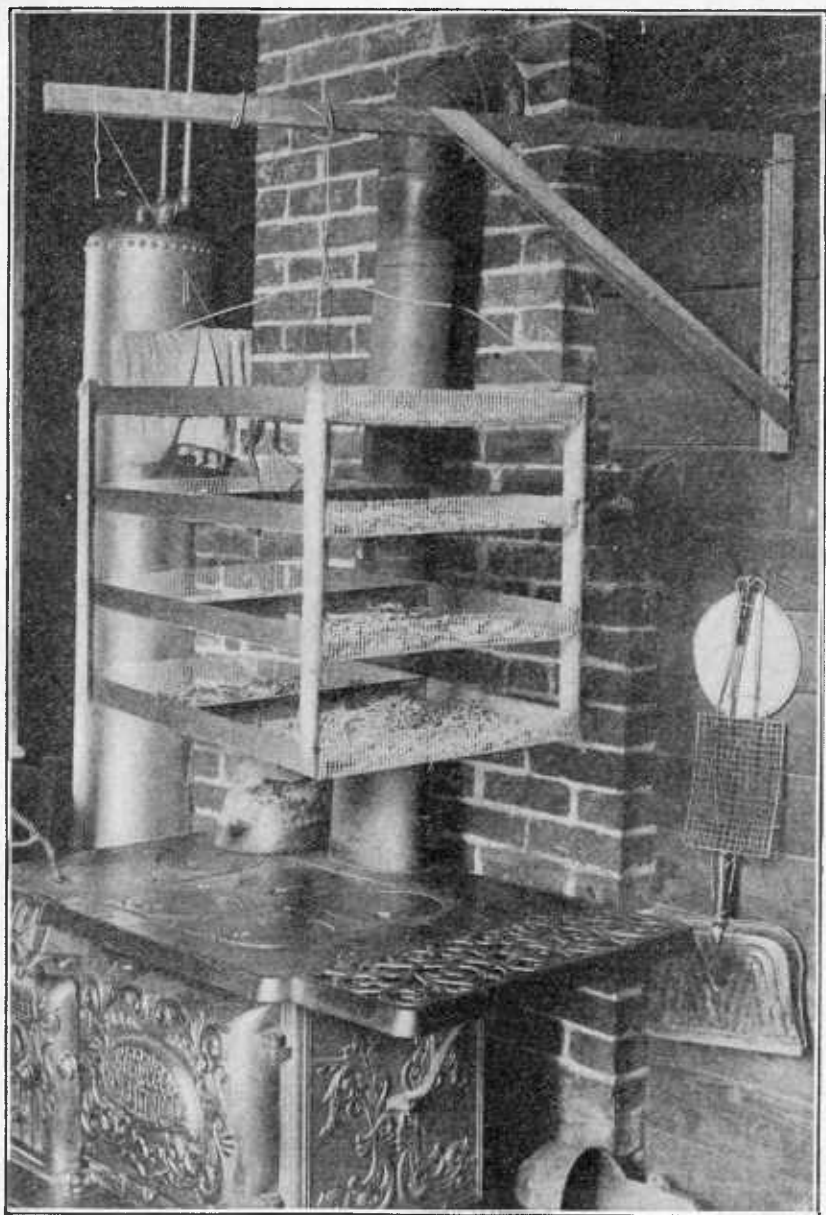


FIG. 13.—A homemade drier made of lath and wire netting. It can be swung over the stove or back out of the way. Although not shown in the illustration, trays are made to fit into the wire and lath shelves. The lath crane is fastened to the wall by means of a hinge made of a turn of wire with a loop in it which is bent around the upright. The looped wire is hung on nails which are driven into the wall and then bent upward at right angles.

sheet iron. Two inches above the bottom is placed a solid sheet of galvanized iron which is 3 inches less in length and width than the bottom. This sheet rests on two wires fastened to the sides of the drier. This prevents the direct heat from coming in contact with the product and serves as a radiator to spread the heat more evenly.

The first tray is placed 3 inches above the radiator. The trays rest on the cleats 3 inches apart. A drier of the given dimensions will hold 8 trays. The frame of the tray is made of 1-inch strips on which is tacked galvanized screen wire, which forms the bottom of the tray. The tray is 21 by 15 inches, making it 3 inches less in depth than the drier. The lowest tray when placed in the drier is

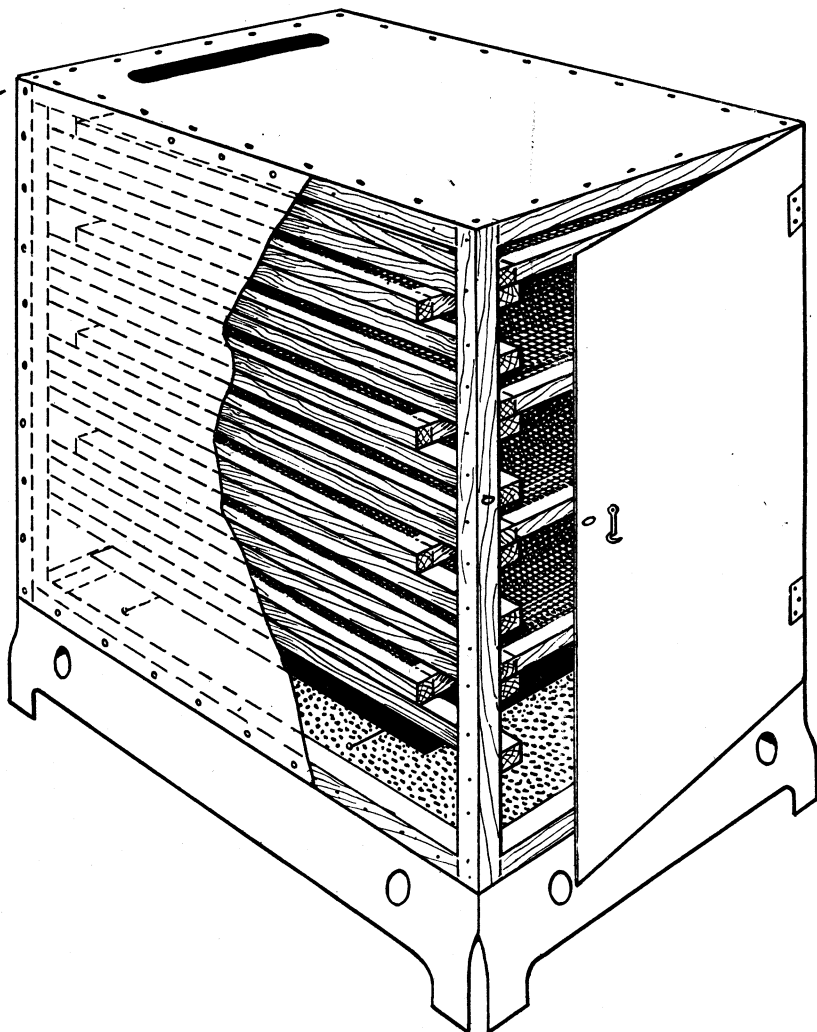


FIG. 14.—A metal-covered cabinet type of homemade drier.

pushed to the back, leaving the 3-inch space in front. The next tray is placed even with the front, leaving a 3-inch space in the back. The other trays alternate in the same way. This permits the current of heated air to pass around and over the trays. A ventilator opening, about 2 inches wide and 6 inches long, is left in the top of the drier, through which the moist air may pass away.

This principle of construction is followed so that currents of heated air will pass over the product as well as up through it, gathering the moisture and passing away. The movement of the current of air induces a more rapid and uniform drying. The upper trays can be shifted to the lower part of the drier, and the lower trays to the upper part as drying proceeds, so as to dry the products uniformly throughout.

Still another home drier is the cookstove oven. Bits of food, left overs, especially sweet corn, can be dried on plates in a very slow oven or on the back of the cookstove and saved for winter use. If the oven is very warm the door should be left ajar and the temperature of the oven often noted. Trays for use in the oven can be made from a convenient sized galvanized wire screen by bending up the edges 1 or 2 inches.

Cookstove driers on the market are of two types. One type (figs. 15-17) consists of a series of trays upon which the material to be dried is spread. These trays are placed in a framework one above the other, forming a compartment through which the heated air rises, carrying off the moisture. The second type (fig. 18) consists of a shallow flat metal box filled with water

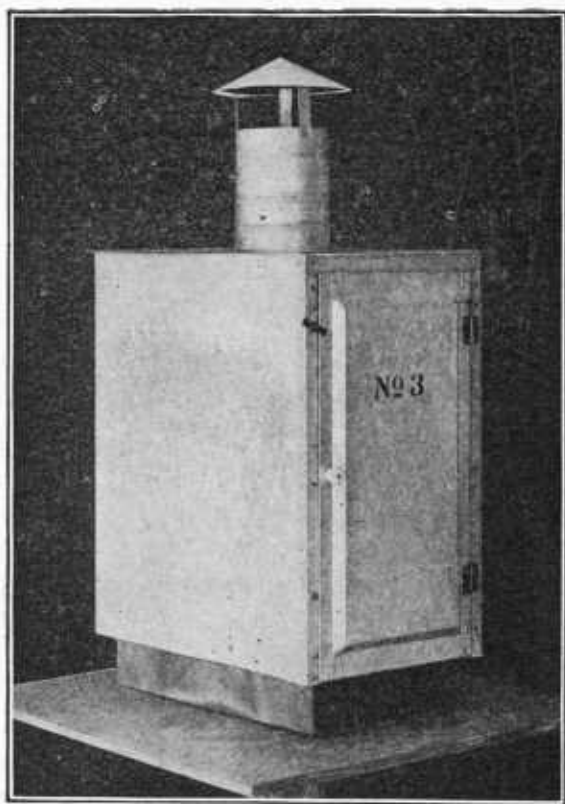


FIG. 15.—A patented drier to be used on the kitchen stove. It has a chamber inclosing the trays and is ventilated by a flue.



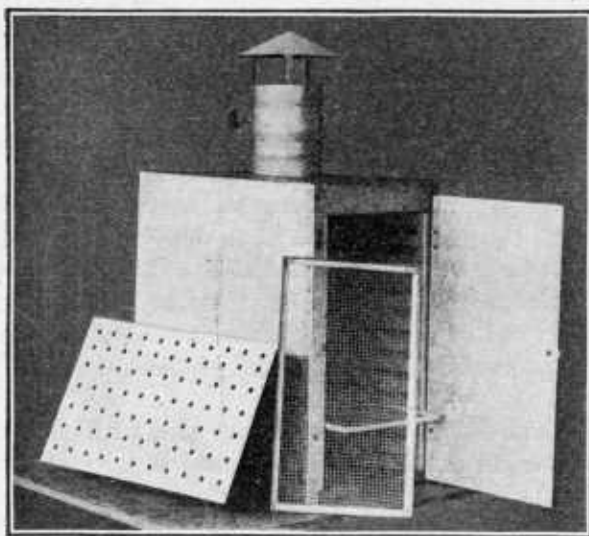


FIG. 16.—The same drier as in figure 15, open to show the parts.

fruits placed in long trays 3 by 1 foot and stacked in two tiers, end to end, before an electric fan can be dried to the requisite dryness within 24 hours. Some require much less time. For instance, sliced string beans and shreaded sweet potatoes will dry before a fan running at a moderate speed within a few hours. In many cities the electric fan will cost not more than one-fourth of a cent an hour to run. The fan should be placed close to the stack of trays, and they should not be filled so full that the air can not pass freely through them. The fan method has a marked advantage in that the product keeps cool owing to evaporation while it is being dried, thus tending to retain the color and eliminate spoilage.

and designed so that one end can rest on the back of the stove and the other on a leg reaching to the floor. It also may be supported over a lamp.

The use of an electric fan in facilitating drying is shown in figure 19. This is feasible for those who already own a fan. It has been found that many sliced vegetables and



FIG. 17.—Another patented drier designed to be set on the kitchen stove, the hot air rising through the trays.

### DIRECTIONS FOR DRYING.

Many of the products for which directions are given here may be dried either with or without preliminary blanching. In such cases both methods are described. Alternative methods are designated by letters.

#### SWEET CORN.

Only very young and tender corn should be used for drying, and it should be prepared at once after gathering.

(a) Cook in boiling water 2 to 5 minutes, long enough to set the milk. Cut the kernels from the cob with a sharp knife, taking care not to cut off pieces of the cob. Spread thinly on trays, and place in position to dry. Stir occasionally until dry.

(b) Boil or steam on the cob 8 to 10 minutes to set the milk. To improve flavor a teaspoon of salt to a gallon of water may be used. Drain well and cut corn from cob, using a very sharp and flexible knife. Cut grains fine, only half way down to the cob, and scrape out the remainder of grain, being careful not to scrape off any of the chaff next to the cob. Dry from 3 to 4 hours at 110° to 145° F. When field corn is used, good, plump roasting-ear stage is the proper degree of ripeness. A pound of dried corn per dozen ears is an average yield.

(c) The corn may be dried in the sun. Dry in oven 10 to 15 minutes, and finish drying in the sun. Sun drying, of course, is not satisfactory in moist weather.

Pack in cartons or boxes for a few days to "condition," as described on page 8.

#### STRING OR SNAP BEANS.

All varieties of string beans can be dried, but only beans in ideal condition for table use should be selected for this purpose.

(a) Wash, remove stem, tip, and "strings." Cut or break the beans into pieces  $\frac{1}{2}$  to 1 inch long, and place on trays and dry. They also can be run through the slicer and then dried quickly.

(b) Prepare as directed above, but instead of cutting the beans, thread them on coarse, strong thread, making long "necklaces" of them, and hang them above the stove or out of doors until dry. An old-fashioned recipe calls for boiling the pods until nearly cooked through before drying.

(c) Wash and string beans carefully. The very young and tender beans can be dried whole. Those that are full grown should be cut in one-fourth to 1 inch lengths with vegetable slicer or a sharp knife. It is better to cut beans than to snap them. They are then put in a bag of cheese cloth or in a wire basket and blanched in boiling

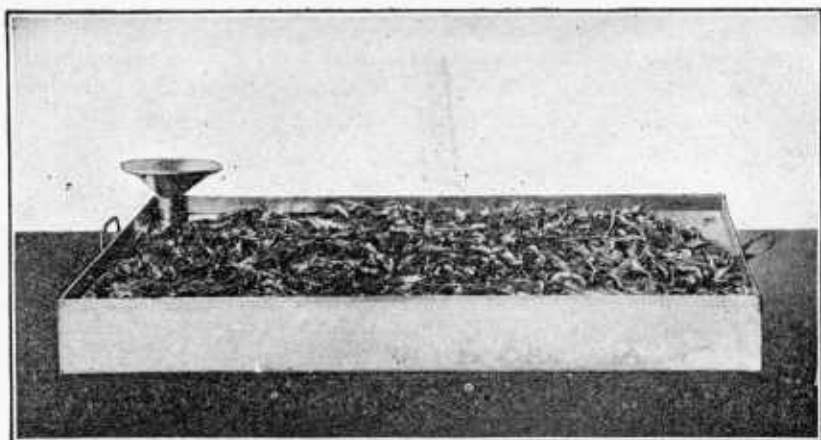


FIG. 18.—This patented drier, made of a metal box filled with water, may be set on the edge of the stove or it may be supported over a lamp.

water for 6 to 10 minutes, depending on the maturity of the bean. One-half teaspoon of soda may be added to each gallon of boiling water to help set the green color in the beans. Remove surface moisture by placing between two towels or by exposing to the sun and air for a short time. Dry young string beans two hours, more matured beans three hours. Begin drying at temperature of 110° F. and raise temperature gradually to 145° F.

Wax beans are dried in the same manner as the green string beans. "Condition" as described on page 8.

#### LIMA BEANS.

Lima beans can be shelled from the pod and dried. If gathered before maturity when young and tender, wash and blanch from 5 to 10 minutes. Length of time for blanching depends upon size and maturity of beans. Remove surface moisture and dry from 3 to 3½ hours at same temperature as string beans.

#### DRY SHELLED BEANS (IMPORTANT IN THE SOUTH).

Beans of different kinds, after maturing and drying on the vines, can be treated as follows: Shell, wash, spread in thin layers on the trays of the drier, and heat 10 minutes, beginning at 160° F. and gradually raising the temperature to 180° F. This high temperature is for the purpose of destroying all insect eggs that may be on the beans. Cowpeas or any field pea can be treated in the same way. Cool and store carefully. It might be added that the heating of the bean or pea destroys its vitality. When so treated it can not be used for seed.

## OKRA.

(a) Small, tender pods sometimes are strung on a stout thread and hung over the stove to dry. If dried in that manner, heat in oven before storing on trays.

(b) Wash, blanch three minutes in boiling soda water, and dry two to three hours at  $110^{\circ}$  to  $140^{\circ}$  F. Use one-half teaspoon soda to a gallon of water. Dry young and small tender pods whole. Older pods should be cut in one-fourth inch slices.

## PEPPERS.

(a) Peppers may be dried by splitting on one side, removing seed, drying in the air, and finishing the drying in the drier at  $140^{\circ}$  F. A more satisfactory method is to place peppers in biscuit pan in oven and heat until skin blisters, or to steam peppers until skin softens, peel, split in half, take out seed, and dry at  $110^{\circ}$  to  $140^{\circ}$  F. In drying thick-fleshed peppers like the pimento, do not increase heat too quickly, but dry slowly and evenly.

(b) Small varieties of red peppers may be spread in the sun until wilted and the drying finished in the drier, or they may be dried entirely in the sun.

(c) Peppers often are dried whole. If they are large they can be strung on stout thread; if small, the whole plant can be hung up to dry.

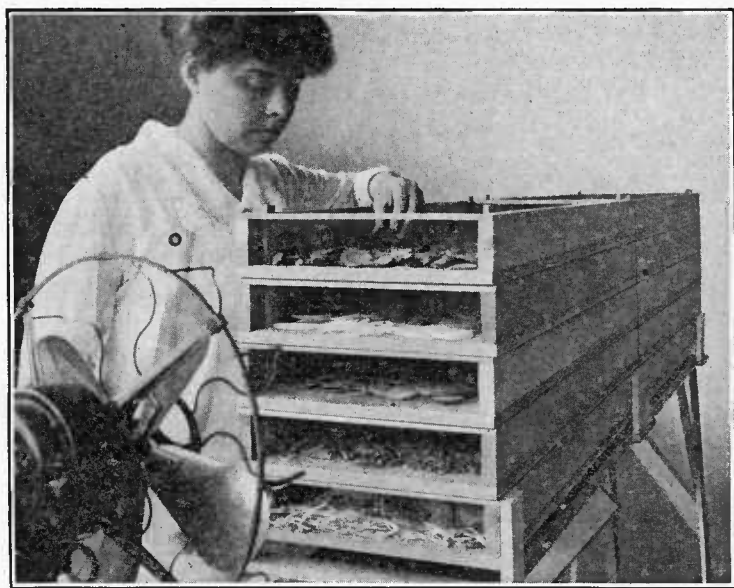


FIG. 19.—Drying fruits and vegetables on homemade racks by forcing air at room temperature across them by means of an electric fan.

## PEAS.

(a) Shell and spread on trays and dry.

(b) Shell full-grown peas with nonedible pod, blanch the peas from 3 to 5 minutes, remove surplus moisture, spread in single layer on trays, and dry from 3 to 3½ hours. Begin drying at 110° F., raising temperature very slowly in about 1½ hours to 145° F. Continue drying 1½ or 2 hours at 145° F.

(c) Shell full-grown peas, passing through a meat grinder (fig. 5), spread on trays, and dry. Whole peas take longer to dry, but when cooked they resemble fresh peas. The ground peas dry more quickly but make a product which can be used successfully only in the preparation of soup or purée.

(d) When drying the very young and tender sugar peas, use the pod also. Wash and cut in quarter-inch pieces. Blanch in boiling water 6 minutes. Remove surplus moisture and dry the same length of time and at the same temperature as string beans. It is not necessary to use soda when blanching peas.

Pack away and "condition" as described on page 8.

## GARDEN BEETS, ONIONS, LEEKS, CARROTS, TURNIPS, PARSNIPS, CABBAGE.

Beets: (a) Select young, quickly grown, tender beets. Wash, peel, slice about ½ inch thick, and dry.

(b) Boil the whole beets with skin until a little more than three-fourths done. Dip in cold water, peel, and slice into ½ or ¼ inch slices. Dry 2½ to 3 hours at 110° to 150° F.

Turnips: Turnips should be treated in the same way as beets.

Carrots: Varieties having a large, woody core should be avoided.

(a) Wash, peel, slice lengthwise into pieces about ½ inch thick, and dry.

(b) Clean, scrape, or pare, and slice into ½-inch slices. Blanch 6 minutes, remove surface moisture, and dry 2½ to 3 hours. Begin drying at 110° F. and raise temperature gradually to 150° F.

Parsnips, kohlrabi, celeriac, and salsify are dried by the same methods.

Onions: (a) Select well-matured onions and remove the outside papery covering. Cut off tops and roots. Slice into ½-inch pieces and dry quickly. Store in a light-proof container to avoid discoloration.

(b) Wash, peel, and slice onions into ½ to ¾ inch slices. To avoid any unpleasantness, peel and slice while holding under water. Blanch in boiling water 5 minutes. Remove surface moisture and dry 2½ to 3 hours, beginning at 110° F. and raising temperature gradually to 140° F.

Leeks are handled in a similar manner, cut into ¼-inch strips and dried.

**Cabbage:** (a) Select well-developed heads of cabbage and remove all loose outside leaves. Split the cabbage, remove the hard, woody core, slice the remainder of the head with a kraut cutter or slicer, and dry.

(b) Shred or cut into strips a few inches long. Blanch 10 minutes, drain, remove surface moisture, and dry 3 hours at 110° to 145° F.

All these products should be "conditioned" as described on page 8.

#### SPINACH AND PARSLEY.

**Spinach** that is in prime condition for greens should be prepared by careful washing and removing the leaves from the roots. Spread the leaves on trays to dry thoroughly. Slicing will greatly facilitate drying.

**Parsley** should be treated in the same way as spinach.

#### BET TOPS, SWISS CHARD, CELERY, AND RHUBARB.

**Beet tops:** Tops of young beets in suitable condition for greens should be selected and washed carefully. Both the leafstalk and the blade should be cut into sections about  $\frac{1}{4}$  inch long, spread on screens, and dried.

**Swiss chard and celery** should be prepared in the same way as beet tops. Celery also may be prepared in the same way as pumpkins and summer squash.

**Rhubarb:** Choose young and succulent growth. Prepare as for stewing, by skinning the leafstalks and cutting into pieces about  $\frac{1}{4}$  inch to  $\frac{1}{2}$  inch in length. Do not use the blade of the leaf.

All these products should be "conditioned" as described on page 8.

#### IRISH POTATOES.

Select good, sound, well-matured potatoes.

(a) Wash and boil or steam until nearly done. Peel and pass through a meat grinder (fig. 5) or a potato ricer. Collect the shreds in layers on a tray and dry until brittle. If toasted slightly in an oven when dry the flavor is improved somewhat.

(b) Boil or steam until nearly done, peel as above, cut into quarter-inch slices, spread on trays, and dry until brittle.

Peeling may be omitted, but the product will be very much inferior in flavor.

#### SWEET POTATOES.

Select sound, mature roots.

(a) Wash, boil until nearly done, peel, and run through the meat chopper. Spread on trays and dry until brittle.

(b) Treat as above, but slice instead of running through the meat chopper.

(c) Wash, peel, slice, spread on trays, and dry. A somewhat brighter product will result if the sliced potato is dipped in salt water just before drying.

#### CAULIFLOWER.

Clean, divide in small bunches, blanch 6 minutes, and dry 2 to 3 hours at 110° to 145° F. Cauliflower will turn very dark when drying, but will regain part of the color in soaking and cooking. Dried cauliflower is especially good in soups and omelets.

Brussels sprouts may be handled in a similar way, but add a pinch of soda to the blanching water.

#### PUMPKINS AND SQUASH.

(a) Select sound, well-grown specimens. Cut into strips; peel these; remove all seeds and the soft part surrounding them. Cut strips into smaller bits not over  $\frac{1}{4}$  inch thick and 2 inches long, and dry.

(b) Pare and cut into about  $\frac{1}{2}$ -inch strips and blanch 3 minutes. Remove surface moisture and dry slowly from 3 to 4 hours, raising temperature from 110° to 140° F.

Pack and "condition" as described on page 8.

#### SOUP MIXTURES.

Each vegetable used in the soup mixture is prepared and dried separately. They are put together in proportions desired, the preferred flavoring vegetables predominating. A combination of several vegetables makes the most desirable soup mixture. Those most often used are carrots, cabbage, onions, celery, potatoes, and okra.

#### HERBS.

Celery tops, parsley, mint, sage, and herbs of all kinds need not be blanched, but should be washed well and dried in the sun or in the drier. These are good for flavoring soups, purées, gravies, omelets, etc.

#### APPLES, PEARS, AND QUINCES.

Early varieties and sweet apples are not well adapted to drying. Winter apples should be used for this purpose.

(a) Peel, core, trim, and slice  $\frac{1}{4}$  inch thick. Dip in weak salt solution containing 8 teaspoons of salt to 1 gallon of water. Spread on trays and dry. It is only necessary to dry apples long enough for them to become tough and somewhat leathery.

(b) Pare, core, and cut into eighths, or core and slice in rings, using fruit or vegetable slicer. As apples discolor quickly, do not let them stand long before drying. To prevent discoloration, as the fruit is prepared it may be dipped for 1 minute in a cold salt bath, using 1 ounce of salt to 1 gallon of water. Remove surplus moisture and dry at 110° to 150° F., raising temperature gradually. Dry from 4 to 6 hours, and longer if necessary.

Pears are dried in the same way as apples. They may be steamed 10 minutes before drying.

Quinces are treated in the same way as pears.

Pack and "condition" as described on page 8.

#### RASPBERRIES.

(a) Sort out imperfect berries, spread the selected berries on trays, and dry. Do not dry so long that they become hard enough to rattle. The drying should be stopped as soon as the berries fail to stain the hand when pressed.

(b) Pick leaves and stems from fruits and spread on trays. Handle carefully and do not bruise. Spread in thin layer on tray and dry slowly. Raise temperature gradually from 110° to 125° F. in about 2 hours. Do not raise temperature higher than 130° F. until a considerable portion of the moisture has evaporated, as otherwise expansion will occur and juice will be lost by dripping. This is accompanied by loss of flavor and color. Finish drying berries at 140° F. for 2 to 3 hours. It is necessary to dry berries from 4 to 5 hours.

Blackberries, dewberries, and huckleberries can be dried in the same way as raspberries.

Pack and "condition" as described on page 8.

#### PEACHES.

Peaches usually are dried unpeeled, but they will be better if peeled before drying.

(a) Remove the stones, cut the fruit into halves, or preferably into smaller pieces, and spread on trays to dry.

(b) Cut in halves, pit, lay in trays pit side up, and dry at same temperature and for same length of time as apples.

Peaches should be packed carefully and "conditioned" as described on page 8.

#### PLUMS AND APRICOTS.

Plums: (a) Plums are not peeled, but the pits are removed, the fruit being cut into halves and dried in the same way as peaches.

(b) Select medium-ripe plums, cover with boiling water, cover the vessel and let stand 20 minutes. Small, thin-fleshed varieties are



not suitable for drying. Drain, remove surface moisture, and dry from 4 to 6 hours, gradually raising temperature from 110° to 150° F.

Apricots are handled in the same way as plums.

Pack and "condition" as described on page 8.

#### CHERRIES.

(a) Remove stems of cherries and, if the fruit is large, the pits also. Spread out on trays to dry. Small, black cherries can be dried when containing the stones.

(b) Wash, remove surface moisture, and spread cherries, unseeded, in thin layer on trays. If cherries are seeded there will be a loss of juice. Dry from 2 to 4 hours at 110° to 150° F. Raise temperature gradually.

Pack and "condition" as described on page 8.

#### PRECAUTIONS AGAINST INSECTS.

Two kinds of moths stand out prominently among insects that attack dried fruits and vegetables. They are much more likely to get into the fruit during the process of drying than to find their way through boxes into the products stored inside them. This applies particularly to drying in the sun.

A small moth called the Indian-meal moth is the most destructive insect that attacks dried fruits and vegetables. It is about three-eighths of an inch long and has a cloaked appearance, one-third gray and the rest copper brown. The fig moth is about the same size but dark neutral gray. A minute flattened chocolate-brown beetle usually accompanies these moths and does considerable damage. Both of the moths deposit their eggs on fruit when it is on the drying racks—generally at dusk or after dark, as they are not fond of daylight. It takes from 3 to 10 days for the eggs to hatch into whitish or pinkish grublike caterpillars and from 5 to 10 weeks from the laying of the eggs till the appearance of the moths to lay another lot of eggs; and since a number of "broods" or generations are produced yearly, if a few of these moth eggs are stored away on dried fruits or vegetables, hundreds of caterpillars are produced and many pounds of valuable material may be destroyed during the course of the winter if it is stored in a warm room. Warm dark bins or dried fruit in sacks offer especially favorable places for their development. It is evident that the larger the amount of material in a package, the greater the chance of a few eggs doing a great deal of damage. Small cartons or containers have the advantage of confining the injury from these moths to small quantities

of material, for, if the containers are closed tightly, they can not easily escape from them and infest other packages, which may not have been infested previously.

In sun drying, if the drying racks are screened early in the evening and at night, the cheesecloth or fly screen battened down, and the dried fruit and vegetables stored in tight paper sacks in a cool place, no danger ordinarily need be feared from these insects. As an additional precaution, the dried product, before being stored, may be heated to 140° F. long enough to allow the heat to penetrate throughout. This will sterilize it if already infested.

In drying by artificial heat, the process itself ordinarily will sterilize the product. But after drying it should be stored promptly, to prevent infestation.

### DIRECTIONS FOR PACKING AND STORING.

Although not necessary, tin cans or glass jars make good receptacles for storage of dried fruits or vegetables. Pasteboard boxes with tight covers, stout paper bags, and patented paraffin paper cartons also afford ample protection for dried products when protected from insects and rodents. The dried fruit or vegetables must be protected from the outside moisture and will keep best in a cool, dry, well-ventilated place. These conditions, however, are difficult to obtain in the more humid regions, and there moisture-tight containers should be used.

If a small amount of dried product is put in each receptacle, just enough for one or two meals, it will not be necessary to open a container the contents of which can not be consumed in a short time. The use of the small container also makes it more difficult for insects to spoil large quantities of the dried fruits or vegetables. If a paper bag is used, the upper part should be twisted into a neck, bent over, and tied tightly with a string. If a further precaution against spoilage is necessary the bag can be coated with paraffin by painting it with a brush which has been dipped into melted paraffin. Another precaution may be taken by placing the small bags in a tin container with a tightly fitting cover, such as an ordinary lard can or pail. All bags should bear a label indicating what they contain.

If fruits or vegetables are packed in tight containers immediately upon being dried thoroughly, they will remain just as brittle as they were when taken from the drier. If, however, they are not dried thoroughly, they will "sweat" and soon mold. To prevent this the material should be examined within 24 hours after packing, and if it appears moist it must be dried further.

## RECIPES FOR COOKING DRIED FRUITS AND VEGETABLES.

It must be remembered that the water which has been dried out of the fruits or vegetables must be restored to them before cooking and that this process requires time. In general, the longer it takes to dry the longer should the dried products soak. Because the kind of vegetable (old and tough or young and tender), the size of the pieces (large or small), and the amount of moisture which the dried product contains affect the length of time the vegetable should soak, the housekeeper must use her best judgment in selecting the method of preparation best suited to her own products.

Once soaked, dried vegetables and fruits can be cooked in almost any of the ways in which fresh ones can be cooked, recipes for which are given below. These are in use by commercial concerns.

### SNAP BEANS.

Soak overnight or 8 to 12 hours, using 10 pints of water to 1 pound of beans, or 3 times as much water as beans. Boil 3 hours in the same water, with a slice of bacon; drain off water and add salt, pepper, and butter. Cream sauce may be used. Four ounces of dried beans will serve 10 people.

### BEETS.

Dried, sliced beets, if soaked too long, lose their red color and good flavor. Soaking for 2 hours (2 parts water to 1 part beets) should be sufficient. They should then be cooked in the same water for about  $1\frac{1}{2}$  hours. If they are cooled in the same water in which they are cooked, it is believed that the color is improved. Cured by process B.

Dried beets, after soaking, may be cooked in various ways, the same as fresh beets.

*Creamed beets.*—Soak 1 cup of dried beet root in 2 cups of water from 6 to 8 hours. Cook until tender. Cool in the same water. Drain off water. Add 2 tablespoons of sugar,  $\frac{1}{4}$  cup of vinegar,  $\frac{1}{4}$  cup of water, tablespoon of butter, and a little salt; heat together to boiling point, thicken a little with flour and water well blended. Serve hot. Cured by process A.

*Pickled beets.*—Cook as above, add vinegar and spices and sweeten to taste. Dried beets may seem to lose color, but cooling in the water in which they were boiled will tend to restore the natural color.

*Buttered beets.*—Soak 2 cups of dried beets for two hours in 4 cups of cold water and cook until tender. Drain and add to the beets 2 tablespoons of butter, 1 teaspoon of salt, and one-fourth teaspoon of pepper. Stir carefully in order to butter and season each slice of beet without breaking it. Serve hot.

### CARROTS.

*Buttered carrots.*—Very young carrots do not require soaking. They may be placed in cold water (about 3 cups of water to 1 cup of dried carrots) and cooked slowly for about  $1\frac{1}{2}$  hours. If the carrots are old and cut in large pieces for drying, soaking 2 to 8 hours or even overnight may be necessary. Drain off water, add salt and pepper, and serve buttered or with drawn butter or cream sauce.

To use with boiled or roast meats, soak as above, boil in same water 10 minutes, and drop in with the meat.

*Carrot pudding.*—Soak  $\frac{1}{2}$  cup of dried carrots in  $2\frac{1}{2}$  cups of water 6 to 8 hours, or overnight. Add to the carrots 1 cup of raw potatoes, 1 cup of dried

cherries, and  $\frac{3}{4}$  cup of suet, and chop up fine. Then add 1 cup of flour, 1 cup of sugar,  $\frac{1}{2}$  teaspoon salt, 1 teaspoon cinnamon,  $\frac{1}{2}$  teaspoon cloves,  $\frac{1}{2}$  teaspoon nutmeg,  $\frac{1}{2}$  teaspoon soda well mixed. Stir until thoroughly mixed. Steam 3 hours and serve hot with pudding sauce.

#### CELERY.

Soak 8 to 12 hours, or overnight, using 12 pints of water to 1 pound of celery, or 3 parts of water to 1 part of celery. Boil in same water until tender and serve with cream and a tablespoon of butter.

#### CORN.

Soak the corn for 2 to 4 hours in water, using 2 cups of water to 1 cup of corn. Some housekeepers prefer to soak it overnight, but if this is done the corn should be kept in a very cool place so that it does not sour. Cook the corn in the water in which it was soaked for an hour or more. Then season with butter, salt, and pepper, and if desired, a very little sugar also. Some housekeepers prefer to add milk to the water in which the corn is cooked or to use cream in place of butter for seasoning it.

#### ONIONS.

Dried, thinly sliced onions may be cooked slowly without previous soaking, about 2 cups of water being needed for each cup of dried onion. If very dry, the onions are better if soaked from 2 to 6 hours and then cooked in the same water until tender. After cooking, the onions may be used like any other onions, in a great variety of ways.

#### PARSNIPS.

Soak the corn for 2 to 4 hours in water, using 2 cups of water to 1 cup or 1 part parsnips to 2 parts water. Cook in the same water 30 minutes. Drain off water and brown in butter or other fat or serve with cream sauce.

#### IRISH POTATOES.

Soak 6 to 8 hours, or overnight, using 8 pints of water to 1 pound of potatoes, or 2 parts of water to 1 part of potatoes.

*Fried potatoes.*—Boil in the same water about 5 minutes. Drain and fry in the same way as fresh potatoes.

*Mashed potatoes.*—Boil in the same water 20 to 30 minutes. Drain and steam 5 to 10 minutes and then mash, adding salt, pepper, butter, and milk.

*Dried cooked potatoes.*—If the potatoes were cooked before drying, it will not be necessary to soak them before cooking. Place the dried potato in a double boiler, add about 2 cups of milk to 1 cup of potato, cover, and steam until soft. Beat, season with salt, pepper, and butter, and serve like fresh mashed potatoes.

#### SWEET POTATO.

Dried raw sweet potatoes may be soaked and cooked like Irish potatoes (see above). In preparing dried cooked sweet potatoes for the table, water should be substituted for the milk used in steaming the Irish potatoes. Except for this, the same method can be followed.

#### RHUBARB.

*Stewed rhubarb.*—Soak 6 to 8 hours, or overnight, using 12 pints of water to 1 pound of rhubarb, or 2 parts of water to 1 part of rhubarb. Cook in the same water until done and sweeten to taste.

*Rhubarb pie.*—Soak 1 cup of dried rhubarb in 2 cups of water 8 to 12 hours. Cook in the same water 30 minutes, then make into a pie as if it were fresh rhubarb.

**SPINACH.**

Dried spinach takes up water very readily and may be cooked slowly without previous soaking. If preferred, it can be soaked 2 to 6 hours, which will shorten the time required for cooking. A little salt pork added to the spinach improves the flavor, or it may be buttered when served.

**SQUASH.**

Soak 8 to 12 hours, or overnight, using 10 pints of water to 1 pound of squash, or 3 parts of water to 1 part of squash.

*Mashed squash.*—Boil slowly in the same water 1 hour. Mash well and add salt, pepper, and butter.

*Squash pie.*—Soak 1 cup of dried squash 8 to 12 hours in 3 cups of water. Cook in the same water 1 hour and mash well. Mix thoroughly 1 egg well beaten,  $\frac{3}{4}$  cup of sugar,  $\frac{1}{2}$  teaspoon salt, and 1 tablespoon flour. Stir in  $\frac{1}{2}$  teaspoon each of cinnamon, nutmeg, allspice, and ginger, a pinch of cloves, and  $1\frac{1}{2}$  cups of milk. Add squash. Bake in a hot oven.

**APPLES.**

Soak 6 to 8 hours, or overnight, using 6 pints of water to 1 pound of apples or 3 parts of water to 1 part of apples. Two hours' soaking is sufficient for thinly sliced apples. Commercial apples are sulphured and do not discolor.

*Apple sauce.*—Cook about 30 minutes in the same water; then add 1 cup of sugar to 1 pound of fruit,  $\frac{1}{2}$  teaspoonful of nutmeg or cinnamon, and mash.

*Apple pie.*—Cook in the same water about 5 minutes to make them tender, then drain off water and use in pie in the same way as fresh apples. One pound of dried apples will make eight large pies.

**CHERRIES.**

Soak 6 to 8 hours, or overnight, using 4 pints of water to 1 pound of cherries, or 3 parts of water to 1 part of cherries.

*Stewed cherries.*—Cook slowly in the same water and sweeten to taste. One pound of dried cherries will serve 15 people.

*Cherry pie.*—Soak  $\frac{1}{2}$  cup of dried cherries in 1 pint of water 6 to 8 hours. Heat in the same water 15 minutes. Drain off the juice and use the cherries in the pie in the same way as fresh cherries. Add a little sugar to the juice drained off, boil down to a sirup, and pour over the pie hot as it is served.

**PRUNES.**

Soak 6 to 8 hours, or overnight, using 2 pints of water to 1 pound of prunes, or 2 parts of water to 1 part of prunes.

*Stewed prunes.*—Cook slowly in the same water and sweeten to taste.

*Spiced prunes.*—Drain off water and add to it the following: For every 2 pounds of soaked up prunes, 1 pound of sugar,  $\frac{1}{4}$  pint of vinegar, 1 teaspoonful cinnamon, 1 teaspoonful allspice and cloves. Put spices in a cloth. Boil the above 15 or 20 minutes until sirupy, then add prunes, and cook slowly about 30 minutes.

**RASPBERRIES.**

Soak 4 to 5 hours, using 6 pints of water to 1 pound of raspberries, or  $1\frac{1}{2}$  parts of water to 1 part of raspberries. Cook in the same water 20 minutes and sweeten to taste. Use in the same way as fresh raspberries.

**OKRA.**

Dried okra should be soaked until soft and used in the same way as fresh okra in the preparation of soups and stews.

# **CABBAGE.**

**Creamed:** Put heaping cup full in 7 cups of *cold fresh* water and bring *very slowly to a boil*, and boil steadily for 30 minutes. Do not cover kettle during cooking. Add  $\frac{1}{2}$  teaspoon salt. *Drain well*. Melt 2 tablespoons butter and, when it is bubbling hot, add 1 heaping tablespoon flour, 1 teaspoon salt,  $\frac{1}{4}$  teaspoon pepper. Stir well but do not brown. Then add 1 cup milk slowly and stir until smooth and thick. Let come to a boil, then add the well drained cabbage and heat together until boiling. Serve at once.

**With vinegar dressing:** Follow above general directions for cooking cabbage. *Drain well*. Add  $\frac{1}{2}$  cup vinegar, 2 tablespoons butter, 1 teaspoon salt,  $\frac{1}{4}$  teaspoon pepper. Return to fire and heat a few minutes. Serve smoking hot.

# **TURNIPS.**

**With butter sauce:** Put heaping cup full in 8 cups cold, fresh water and bring *very slowly to a boil*, and boil steadily for 20 minutes. Add  $\frac{1}{2}$  teaspoon salt and boil 25 minutes longer. Do not cover kettle during cooking. *Drain well*, and add 2 tablespoons butter, 1 teaspoon salt,  $\frac{1}{4}$  teaspoon pepper, return to fire and heat until butter is all absorbed and serve smoking hot.

**In white sauce:** Follow above general directions for cooking turnips and *drain well*, melt 2 tablespoons butter and, when it is bubbling hot, add 1 tablespoon flour,  $\frac{1}{2}$  teaspoon salt, and  $\frac{1}{8}$  teaspoon pepper. Stir well but do not brown, then add 1 cup milk slowly and stir until thickened. Let come to a boil; add the well-drained turnips and heat together until boiling.

